

## PATENT ABSTRACTS OF JAPAN

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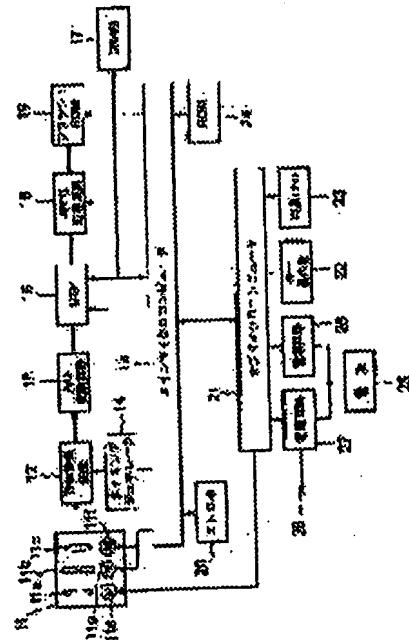
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### (54) DIGITAL CAMERA DEVICE

(57)Abstract:

**PROBLEM TO BE SOLVED:** To provide a digital camera device for easily shortening time after power is supplied until a photographable state is attained with simple constitution.

**SOLUTION:** In this digital camera device provided with a main microcomputer 13 for transferring a program recorded in a ROM 24 to a DRAM 17 and performing an operation when power supply is started and a sub microcomputer 21 for controlling the power supply to the main microcomputer 13 based on the operation of a power switch, in the state that the power supply to the main microcomputer 13 is started by the sub microcomputer 21, the collapsible barrel release processing of a zoom lens 11a is performed by the sub microcomputer 21 parallelly to a program transfer processing from the ROM 24 to the DRAM 17 by the main microcomputer 13.



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## DETAILED DESCRIPTION

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### [Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to amelioration of the digital camera equipment which used the collapsible mount type zoom lens.

[0002]

[Description of the Prior Art] As everyone knows, in recent years, the digital camera equipment changes the optical image of the photoed photographic subject into the gestalt of digital image data, performs predetermined compression processing, and made it make semiconductor memory memorize has spread.

[0003] Drawing 3 shows such conventional digital camera equipment. In drawing 3, a sign 11 is a lens unit and consists of collapsible mount type zoom lens 11a, shutter [ drawing-cum-] 11b, and image pick-up lens 11c.

[0004] Moreover, zoom motor 11d for driving zoom lens 11a, control-motor 11e for controlling shutter [ drawing-cum-] 11b, and focal motor 11f for driving image pick-up lens 11c in the direction of a focus are installed in this lens unit 11, respectively.

[0005] At the time of photography, incidence of the optical image of a photographic subject is carried out to the solid state camera 12 which passes the above-mentioned lens unit 11, for example, contains CCD (Charge Coupled Device) etc., and it is changed into the picture signal of an analog.

[0006] In this case, the solid state camera 12 is operating based on the driving pulse generated from the timing generator 14 controlled by the Maine microcomputer 13.

[0007] After the analog picture signal outputted from this solid state camera 12 is supplied to the A/D (Analog/Digital) conversion circuit 15 and is changed into digital image data, it is supplied to DSP (Digital Signal Processor) 16.

[0008] This DSP16 uses DRAM (Dynamic Random Access Memory) 17 as operating memory, changes the inputted digital image data into a luminance signal and a chrominance signal based on control of the Maine microcomputer 13, and is outputting it to the JPEG (Joint Photographic Experts Group) processing circuit 18.

[0009] And photography is completed, when this JPEG processing circuit 18 changes into the data of a JPEG format the luminance signal and chrominance signal which were inputted and writes in a flash ROM (Read Only Memory) 19. In addition, as for these JPEG processing circuit 18 and the flash ROM 19, the actuation is controlled by the Maine microcomputer 13.

[0010] This Maine microcomputer 13 communicates with control of a stroboscope 20, and the submicrocomputer 21, receives the actuation information in the key stroke section 22, or is outputting the display information over black and white (Light Emitting Diode) LED 23 while it controls zoom motor 11d of the lens unit 11, control-motor 11e, and focal motor 11f other than the above-mentioned control.

[0011] Moreover, the program which the Maine microcomputer 13 performs is stored in ROM24. The Maine microcomputer 13 has taken the gestalt performed once it transmits the program of ROM24 to

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DRAM17, when the electric power switch of the key stroke section 22 is switched on and the electric power supply to self is started.

[0012] Here, regardless of the electric power switch of the key stroke section 22, power of a cell 25 is constant-voltage-ized by the power circuit 26, and is made the submicrocomputer 21 firm gas. That is, an electric power supply is performed from the event of putting a cell into a camera, and the submicrocomputer 21 is in the actuation condition.

[0013] Moreover, the power of the above-mentioned cell 25 is supplied to other power circuits 27. This power circuit 27 performs an electric power supply in all the circuits except the submicrocomputer 21 in digital camera equipment, generates some kinds of constant voltages from the power of a cell 25, and supplies them through a power supply terminal 28.

[0014] However, the electric power supply by this power circuit 27 is controlled by the submicrocomputer 21. That is, the submicrocomputer 21 controls a power circuit 27 by the condition that the electric power switch of the key stroke section 22 is not switched on, to an OFF state, and the electric power supply is made not to be made in each circuit in it.

[0015] And where the electric power switch of the key stroke section 22 is switched on, the submicrocomputer 21 controls a power circuit 27 to an ON state, and thereby, an electric power supply is made in each circuit containing the Maine microcomputer 13.

[0016] By the way, if a power circuit 27 is turned on and an electric power supply is performed to the Maine microcomputer 13 as shown in drawing 4 (a), as shown in this drawing (b), after the Maine microcomputer 13 performs program transfer processing to DRAM17 from ROM24, makes zoom motor 11d drive after that first and cancels collapsing of zoom lens 11a, it will be in the normal operating state which can be photoed.

[0017] For this reason, since the time amount taken [ after the electric power switch of the key stroke section 22 is switched on and the submicrocomputer 21 controls a power circuit 27 to an ON state ] to attain photography of the Maine microcomputer 13 to the program transfer processing to DRAM17 from ROM24 and collapsing discharge processing of zoom lens 11a is taken, the problem that the latency time after switching on an electric power switch until it will be in the condition which can be photoed becomes long has arisen.

[0018] Since it is so especially long that the time amount which the transfer processing takes by the amount of data of the program transmitted to DRAM17 from ROM24 becoming huge cannot be practically disregarded, either, since the engine performance of digital camera equipment improves in current and it is multi-functionalized, the above-mentioned problem is much more serious.

[0019]

[Problem(s) to be Solved by the Invention] As mentioned above, with conventional digital camera equipment, since the Maine microcomputer will be in the condition which can be photoed after performing program transfer processing and collapsing discharge processing of a zoom lens one by one if an electric power switch is switched on and an electric power supply is performed to the Maine microcomputer, it has the problem that the latency time after switching on an electric power switch until it will be in the condition which can be photoed becomes long.

[0020] Then, this invention aims at offering the very good digital camera equipment which enabled it to shorten time amount until it was made in consideration of the above-mentioned situation and will be in the condition which can be photoed from a power up easily with a simple configuration.

[0021]

[Means for Solving the Problem] The signal-processing means which the digital camera equipment concerning this invention changes into digital image data the optical image of the photographic subject by which incidence was carried out through the lens unit containing a collapsible mount type zoom lens, and is stored in a storage, The 1st control means which controls actuation of a signal-processing means based on the program which transmitted the program recorded on the 1st storage at the time of electric power supply initiation to the 2nd storage, and was transmitted to this 2nd storage, It is aimed at the thing equipped with the 2nd control means which controls the electric power supply to the 1st control means based on actuation of an electric power switch.

[0022] And after the electric power supply to the 1st control means has been started by the 2nd control means, it is parallel to the program transfer processing to the 2nd storage from the 1st storage by the 1st control means, and it constitutes so that the 2nd control means may perform collapsing discharge processing of a zoom lens.

[0023] Since according to the above configurations it is parallel to the program transfer processing to the 2nd storage from the 1st storage by the 1st control means and the 2nd control means was made to perform collapsing discharge processing of a zoom lens, time amount until it will be in the condition which can be photoed from a power up easily with a simple configuration can be shortened.

[0024]

[Embodiment of the Invention] Hereafter, the gestalt of implementation of this invention is explained to a detail with reference to a drawing. In drawing 1, when the same sign is attached and explained to the same part as drawing 3, it is a different part from the former which made it make collapsing of zoom lens 11a cancel by replacing with the Maine microcomputer 13 and making actuation control of zoom motor 11d perform to the submicrocomputer 21.

[0025] In this case, if the electric power switch of the key stroke section 22 is switched on, the submicrocomputer 21 makes a power circuit 27 an ON state by this first as shown in drawing 2 (a), and an electric power supply is performed in each circuit, the Maine microcomputer 13 will perform program transfer processing to DRAM17 from ROM24, as shown in this drawing (b).

[0026] Moreover, if a power circuit 27 is made into an ON state as shown in drawing 2 (a), as shown in this drawing (c), the submicrocomputer 21 will make zoom motor 11d drive, and will perform collapsing discharge processing of zoom lens 11a so that it may be made parallel to the program transfer processing to DRAM17 from ROM24 by the Maine microcomputer 13.

[0027] And the Maine microcomputer 13 and the submicrocomputer 21 will be in the normal operating state which can both be photoed, after waiting to complete the processing ( drawing 2 collapsing discharge processing) with later ending among the program transfer processing to above-mentioned DRAM17 from ROM24, and collapsing discharge processing of zoom lens 11a, that is, completing both processings.

[0028] In addition, although the submicrocomputer 21 performed uniquely independently to the Maine microcomputer 13 about collapsing discharge processing of zoom lens 11a, zoom lens 11a is made driven in a normal operating state, when the Maine microcomputer 13 controls zoom motor 11d through the submicrocomputer 21.

[0029] Moreover, when the charge of an electric power switch is canceled, the submicrocomputer 21 makes a power circuit 27 an OFF state, and it operates so that the electric power supply to each circuit may be stopped, while making zoom motor 11d drive uniquely and making zoom lens 11a into a collapsed state.

[0030] It is made to make the submicrocomputer 21 for according to the above-mentioned gestalt of operation, making a power circuit 27 into an ON state by the charge of an electric power switch, and making an electric power supply perform in each circuit control zoom motor 11d. Since it is made parallel to the program transfer processing to DRAM17 from ROM24 by the Maine microcomputer 13 and was made to perform collapsing discharge processing of zoom lens 11a at the time of the charge of an electric power switch The latency time after an electric power switch is easily switched on with a simple configuration until it will be in the condition which can be photoed can be shortened.

[0031] In addition, this invention is not limited to the above-mentioned gestalt of operation, in the range which does not deviate from that summary this outside, can deform variously and can be carried out.

[0032]

[Effect of the Invention] As explained in full detail above, according to this invention, the very good digital camera equipment which enabled it to shorten time amount until it will be in the condition which can be photoed from a power up easily with a simple configuration can be offered.

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DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] The block block diagram shown in order to explain the gestalt of operation of the digital camera equipment concerning this invention.

[Drawing 2] Drawing shown in order to explain the actuation in the gestalt of this operation.

[Drawing 3] The block block diagram shown in order to explain conventional digital camera equipment.

[Drawing 4] Drawing shown in order to explain the trouble of the digital camera equipment of \*\*\*\*\*.

[Description of Notations]

- 11 -- Lens unit,
- 12 -- Solid state camera,
- 13 -- Main microcomputer,
- 14 -- Timing generator,
- 15 -- A/D-conversion circuit,
- 16 -- DSP,
- 17 -- DRAM,
- 18 -- JPEG processing circuit,
- 19 -- Flash ROM
- 20 -- Stroboscope,
- 21 -- Submicrocomputer,
- 22 -- Key stroke section,
- 23 -- Black and white LED
- 24 -- ROM,
- 25 -- Cell,
- 26 27 -- Power circuit,
- 28 -- Power supply terminal.

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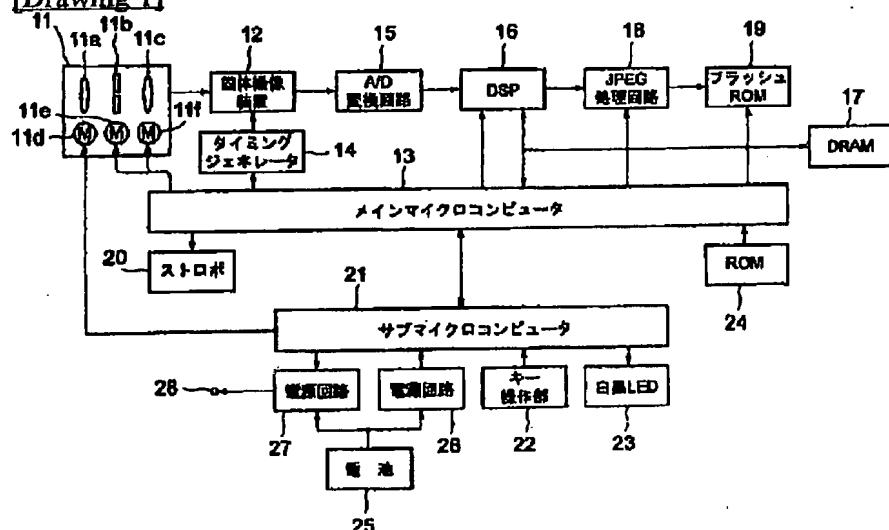
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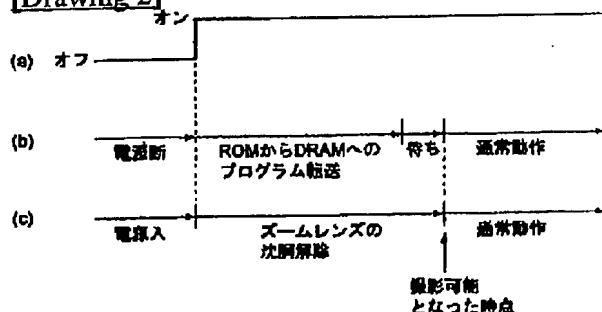
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**DRAWINGS**

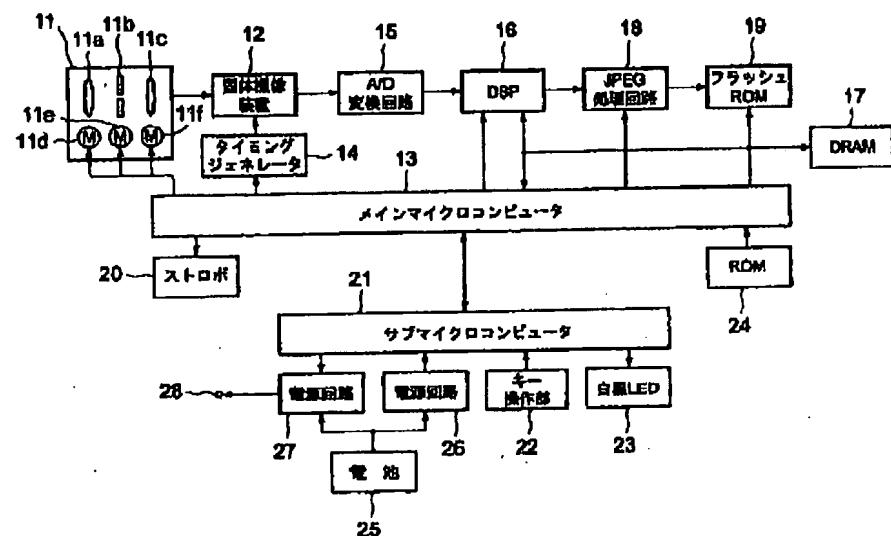
**[Drawing 1]**



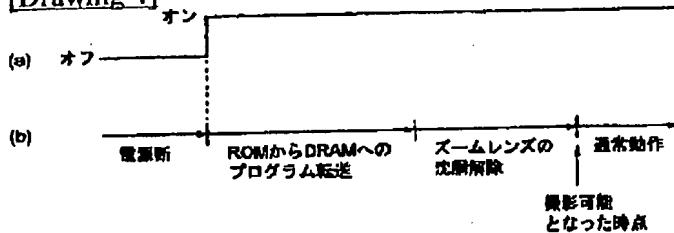
**[Drawing 2]**



**[Drawing 3]**



[Drawing 4]



[Translation done.]